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FIG 2A

Savinase.seq

GAASFVPGEPTQDGCNGHGTBVAAGTIAALNNSIGVLGVAPSAETLYAVKVLGASGSGSVSSIAAQGLE193

GAASFVPGEPTQDGCNGHGTBVAAGTIAALNNSIGVLGVAPSAETLYAVKVLGASGSGSVSSIAAQGLE193

Subtilisin Structure-Function Correlation

Thermostability Motifs

Majority	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	70	80	90	100	110	120	130
3a3.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
6a6.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
4a6.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
3a3.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
3a2.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
6a9.seq	W A A T N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
3a7.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
5b11.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
4d10.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
1f6.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
4c2.seq	W A A A N N W H I A N M S L G S D A P S T T L E R A V N Y A T S R D V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D	361						
Savinase.seq	W A G N N G N H V A N L S L G S P S P S A T L E Q A V N S A T S R G V L V V A A S G N S G A G S I S Y P A R Y A N A M A V G A T D	388						

FIG 2B

Subtilisin Structure-Function Correlation

Thermostability Motifs

Majority	140	150	160	170	180	190	
	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASLNGTSMATPHVAGAAALVK						
3a3.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
6a6.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
4c6.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGGQYAE						523
3b3.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASL						523
3e2.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASL						523
6a9.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASL						523
3a7.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASL						523
5b11.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
4d10.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
1f6.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
4c2.seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYVSM						523
	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASL						523

Savimase.seq QNNRRANFSQYGCAGLDIVAPGVNVQSTYPGSTYASLNGTSMATPHVAGAAALVKQKNPSWSNVX 590

*Subtilisin Structure-Function Correlation
pH Shifting Motifs*

Majority	10	20	30	40	50	60
	G A S F V P G E P S T Q D G N G C H G T H V A G T I A A L D N S E G V L G V A P N A D L Y A V K V L G A S G S G S I S G I A Q G L E					
5e1.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L D N D E G V V G V A P N A D L Y A V K V L	S A S G S G S I S S I A Q G L E	166		
6a4.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L D N D E G V V G V A P N A D L Y A V K V L	S A S G S G S I S S I A Q G L E	166		
9b4.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L D N D E G V V G V A P N A D L Y A V K V L	S A S G S G S I S S I A Q G L E	166		
-1c10.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L D N D E G V V G V A P N A D L Y A V K V L	S A S G S G S I S S I A Q G L E	166		
7a2.seq	- - - - -	S T Q D G N G C H G T H V A G T V A A L N N S I G V L G V A P N A E L Y A V K V L	G A S G S G S I S S I A Q G L E	166		
4d1.seq	- - - - -	S T Q D G N G C H G T H V A G T V A A L D N S V G V L G V A P E A D L Y A V K V L	S A S G A G S I S S I A Q G L E	166		
6b6.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L N N S I G V L G V A P N A E L Y A V K V L	G A P G P G S V S G I A Q G L E	166		
6b6.seq	- - - - -	S T Q D G N G C H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L	G A N G R G S V S G I A Q G L E	166		
7c6.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L D N D E G V V G V A P N A D L Y A V K V L	G A N G R G S V S G I A Q G L E	166		
6b11.seq	- - - - -	S T Q D G N G C H G T H V A G T I A A L N N S I G V L G V A P N A E L Y A V K V L	G A S G S G S I S G I A Q G L E	166		

Savinase.seq
G A S F V P G E P S T Q D G N G C H G T H V A G T I A A L N N S I G V L G V A P S A E L Y A V K V L G A S G S G S V S S I A Q G L E 190

FIG 2D

Subtilisin Structure-Function Correlation

pH Shifting Motifs

Majority	140	150	160	170	180	190
	QNNRASFSQYGAGLDIVAPGVGVQSTYPGNRYASLNGTSMATPHVAGVAAALVKQKNPSWSNVX					
5e1 seq	QNNRASFSQYGAGLDIVAPGVGVQSTYPGNRYASLNGTSMATPHVAGVAAALVK					523
6a4 seq	QNNRASFSQYGAGLDIVAPGVGVQSTYPGSGTYASLNGTSMATPHVAGVAAALVK					523
9b4 seq	QNNRASFSQYGAGLDIVAPGVGVQSTYPGSGTYASLNGTSMATPHVAGVAAALVK					523
1c10 seq	QNNRASFSQYGAGLDIVAPGVGVQSTYPGNRYASLNGTSMATPHVAGVAAALVK					523
7a2 seq	QNNRRANFSQYGTGIDIVAPGV[EIE]STYPGSG[S]Y[DSL]RGTSMATPHVAGVAAALVK					523
4d7 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASLNGTSMATPHVAGVAAALVK					523
6b6 seq	QNNRASFSQYGAGLDIVAPGVNVQSTYPGSGTY[DSL]SGTSMATPHVAGVAAALVK					523
6b6 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGGQ[YA[E]LSGTSMAS]PHVAGVAAALVK					523
7c6 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASLNGTSMATPHVAGVAAALVK					523
6b11 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNRYASLNGTSMATPHVAGVAAALVK					523

Savinase seq QNNRASFSQYGAGLDIVAPGVNVQSTYPGSGTYASLNGTSMATPHVAGVAAALVKGKNPSWSNVX 580

FIG 2F

Subtilisin Structure-Function Correlation

Activity in DMF Motifs

Majority	10	20	30	40	50	60
	G A S F V P G E P S T Q D G N G H G T H V A G T I A A L N N S I G V L G V A P N A D L Y A V K V L G A N G S G S V S G I A Q G L E					
3d11 seq	- - - - -	S T Q D G N G H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L G A N G S G S V S G I A R G L E	166			
2b8 seq	- - - - -	S T Q D G N G H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L G A N G R G S V S G I A R G L E	166			
2b4 seq	- - - - -	S T Q D G N G H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L G A N G R G S V S G I A Q G L E	166			
2g6 seq	- - - - -	S T Q D G N G H G T H V A G T I A A L N N N V G L G V A P N V E L Y G V K V L G A S G S I S G I A Q G L Q	166			
3g9 seq	- - - - -	S T Q D G N G H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L G A N G R G S V S G I A Q G L E	166			
5f4 seq	- - - - -	S T Q D G N G H G T H V A G T I A A L N N S I G V L G V A P N A D L Y A V K V L G A N G S G S V S G I A R G L E	166			
9e3 seq	- - - - -	S T Q D G N G H G T H V A G T I A A L N N N V G L G V A P N V E L Y G V K V L G A S G S I S G I A Q G L Q	166			
1c4 seq	- - - - -	S T Q D G N G H G T H V A G T V A A L N N S I G V I G V A P S A D L Y A V K V L G A N G R G S V S G I A Q G L E	166			
8c2 seq	- - - - -	S T Q D G N G H G T H V A G T I A A L N N S I G V L G V A P N A E L Y A V K V L G A N G R G S V S G I A Q G L E	166			
8h2 seq	- - - - -	S T Q D G N G H G T H V A G T I A A L N N S I G V I G V A P N A D L Y A V K V L G A N G S G S V S G I A R G L E	166			

Serinease seq G A S F V P G E P S T Q D G N G H G T H V A G T I A A L N N S I G V L G V A P S A E L Y A V K V L G A S G S V S S I A Q G L E 193

FIG 2C

Subtilisin Structure-Function Correlation

Activity in DMF Motifs

Majority	70	80	90	100	110	120	130
	W A A A N N M H I A N M S L G S D A P S A T L E Q A V N Y A T S R G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D						
3d11 seq	W A A T N N M H I A N M S L G S D F P S S T L E R A V N Y A T S R D V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
2b8 seq	W A A A N N M H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
2b4 seq	W A A A N N M H I A N M S L G S D A P S T T L G R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
2g6 seq	W A G N N G M H I A N M S L G T S A P S A T L E Q A V N A A T S R G V L V I A A S G S N G A G S V G Y P A R Y A N A M A V G A T D 361						
3g9 seq	W A A A N N M H I A N M S L G S D F P S S T L E R A V N Y A T S R D V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
5f4 seq	W A A T N N M H I A N M S L G S D A P S T T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
9e3 seq	W A G N N G M H I A N M S L G T S A P S A T L E Q A V N A A T S R G V L V I A A S G S N G A G S V G Y P A R Y A N A M A V G A T D 361						
1c4 seq	W A A A N N M H I A N M S L G S D F P S S T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
8c2 seq	W A A A N N M H I A N M S L G S D A P S T T L K R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
8h2 seq	W A A T N N M H I A N M S L G S D F P S S T L E R A V N Y A T S Q G V L V I A A T G N N G S G S V G Y P A R Y A N A M A V G A T D 361						
Sw19ase seq	W A G N N G M H V A N L S L G S P S P S A T L E Q A V N S A T S R G V L V V A A S G N S G A G S I S Y P A R Y A N A M A V G A T D 388						

FIG 2H

Subtilisin Structure-Function Correlation

Activity in DMF Motifs

Majority	140	150	160	170	180	190
	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGVAAALVKQKNPWSNVK					
3dl1 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGAAALVK					523
2b8 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGVAAALVK					523
2b4 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGVAAALVK					523
2q6 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYVSMNGTSMATPHVAGVAAALVK					523
3q9 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGVAAALVK					523
5f4 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYARLNGTSMATPHVAGVAAALVK					523
9e3 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYVSMNGTSMATPHVAGVAAALVK					523
1c4 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGAAALVK					523
8c2 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGAAALVK					523
8h2 seq	QNNRRANFSQYGTGIDIVAPGVNVQSTYPGNNRYASLNGTSMATPHVAGVAAALVK					523
Savinase seq	QNNNRASFSQYGAGLDIVAPGVNVQSTYPGSTYASLNGTSMATPHVAGAAALVKQKNPWSNVK					590

FIG 21